Amendments to the Drawings

Applicant has amended Figures 1, 3, 4, 9B, 11 and 13 to overcome the Examiner's objection to the drawings. The amendments are shown in red on Annotated Sheets 1-5 attached hereto. The amended Figures are attached as Replacement Drawing Sheets 1-5. Entry and approval of these replacement figures is respectfully requested.

REMARKS

In response to the Office Action mailed January 5, 2005, Applicant submits the following amendments and remarks. Claims 7-17 were previously pending in this application (claims 1-6 having been withdrawn from consideration). By this amendment, Applicant is amending claims 7, 9, 12 and 13, canceling claim 10 and adding new claims 18-30. As a result, claims 7-9 and 11-30 are pending for examination with claims 7, 9, 12, 15, 18, 21 and 29 being independent claims. No new matter has been added and the application as presented is believed to be in condition for allowance.

Summary of Telephone Interview with Examiner

Applicant thanks the Examiner for conducting a telephone interview with Applicant's representative's assistant on May 2, 2005 to discuss the drawings. During the interview, the Examiner explained that Figures 1, 3, 4, 9B, 11 and 13 were objected because the twisted pairs of insulated conductors (and in Figs. 11 and 13, also the core and the jacket) are shown without proper cross-hatching. Applicant believes that the drawings were compliant with the twisted pairs shown in phantom lines in Figs. 1, 3, 4 and 9B because the focus of the drawings was not on the twisted pairs and the intent was to show the twisted pairs in phantom. However, Applicant's representative's assistant agreed to make the necessary changes to the drawings to overcome the Examiner's objection.

Objection to the Drawings

The Examiner has objected to Figures 1, 3, 4, 9B, 11 and 13 as lacking proper cross-hatching. Applicant has amended the drawings to include proper cross-hatching as requested by the Examiner. Accordingly, withdrawal of the objection to the drawings is respectfully requested. Marked-up copies of the amended figures are attached as annotated sheets 1-5.

Priority

The Examiner states that Applicant has not complied with one or more conditions for receiving priority under 35 U.S.C. § 120. Specifically, the Examiner states that in the first paragraph of the specification where the priority information is listed, Applicant should identify whether US Patent Application 10/430,365 is patented, pending or abandoned.

Applicant has amended the specification on page 1 to specify that US Patent Application 10/430,365 is now abandoned, thereby overcoming the Examiner's objection. Accordingly, the claim for priority is complete and withdrawal of the objection is respectfully requested.

Rejections under 35 U.S.C. § 112

Claims 7 and 8 stand rejected under 35 U.S.C. §112, second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. Specifically, the Examiner states that the recitation of the limitation "the data cable" in lines 5-6 of claim 7 is unclear and that claim 8 is objected to because it depends from claim 7.

Applicant has amended claim 7 to replace "the data cable" with "the shielded cable" for clarification, thereby overcoming the Examiner's rejection of claim 7. Accordingly, withdrawal of the rejection of claims 7 and 8 is respectfully requested.

Rejections under 35 U.S.C. § 102

Claim 7 stands rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,789,711 to Gaeris et al (herein referred to as "Gaeris"). Applicant has amended claim 7 to overcome this rejection.

Applicant disagrees with the Examiner's assertion that the "binder 38" disclosed in Gaeris is a "jacket layer" because Gaeris uses different terms and different reference numerals to distinguish between what he considers a "jacket" and a "binder," indicating that these two elements are not the same. However, Applicant has amended claim 7 to now recite that "at least one of the first jacket layer and the second jacket layer comprises a plurality of protrusions." Neither the jacket 36 nor the binder 38 disclosed in Gaeris comprise a plurality

of protrusions as specified in Applicant's claim 7, as amended. Therefore, because Gaeris does not disclose each and every limitation recited in Applicant's claim 7, as amended, Gaeris cannot anticipate claim 7. Accordingly, withdrawal of the rejection of claim 7 is respectfully requested.

Rejections under 35 U.S.C. § 103

Claim 8 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Gaeris in view of EP 1 162 632 A2 to Boucino (herein referred to as "Boucino"). Applicant respectfully traverses this rejection.

Claim 8 depends from claim 7 and therefore incorporates all the limitations recited in claim 7. As discussed above, Applicant has amended claim 7 to recite that "at least one of the first jacket layer and the second jacket layer comprises a plurality of protrusions," which is not disclosed or suggested by Gaeris. Applicant does not agree with the Examiner's characterization of Boucino as disclosing a core having a plurality of pinch points and also does not agree that the proposed combination of Gaeris and Boucino suggested in the Office Action is proper. Furthermore, Boucino does not disclose or suggest a cable having a dual-layer jacket in which at least one of the jacket layers comprises a plurality of protrusions. Therefore, Boucino does not cure the deficiencies of Gaeris and even if one were to combine Gaeris and Boucino, the combination does not disclose or suggest all the limitations recited in Applicant's claim. Accordingly, claim 8 is not rendered unpatentable by the art of record and withdrawal of the rejection of claim 8 is respectfully requested.

Claims 9-14 stand rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,248,954 to Clark et al (herein referred to as Clark 1) in view of U.S. Patent No. 6,303,867 to Clark et al (herein referred to as Clark 2). Applicant has amended independent claim 9 to further distinguish over the art of record and traverses this rejection as follows:

Applicant's claim 9, as amended, recites that "each of the first and second jackets comprises a plurality of protrusions," and that "the plurality of protrusions of the first jacket are inwardly projecting and have a first spacing sufficiently small so as to prevent any one of the plurality of twisted pairs of insulated conductors from lying in between adjacent ones of the plurality of protrusions." By contrast, in Clark 2, the projections from the jacket are

specifically designed to separate one twisted pair from another and it is a purpose of Clark 2 to have a twisted pair lying between a pair of jacket projections. Therefore, although Applicant does not agree that the proposed combination of Clark 1 and Clark 2 is proper, even in combination, Clark 1 and Clark 2 fail to disclose or suggest a bundled cable as claimed in claim 9, wherein the plurality of protrusions of the first jacket are inwardly projecting and have a sufficiently close spacing so as to prevent one twisted pair from lying in between adjacent ones of the plurality of projections. Accordingly, withdrawal of the rejection of claim 9 is respectfully requested.

Claim 10 has been canceled. Therefore, the rejection is moot with respect to claim 10.

Claims 11, 13 and 14 depend from claim 9 and are therefore allowable for at least the same reasons as discussed with respect to claim 9.

Claim 12 has been rewritten into independent form. Claim 12, as amended, recites a bundled cable wherein "each of the first and second jackets comprises a plurality of protrusions" and wherein "the plurality of protrusions of each of the first and second jackets are outwardly projecting, and wherein the first and second jackets are adapted to mate with one another so as to lock the first cable to the second cable."

The Examiner states in the Office Action that Clark 2 discloses that "the first and second cables (532 and 530) may comprise a plurality of protrusions (508) of each of the first and second jackets (top left and bottom 502) projecting outwardly wherein the first and second jackets (top left and bottom 502) are adapted to mate with one another so as to lock the first cable (532) to the second cable (530, col. 7, lines 50-60). Applicant respectfully disagrees that Clark 2 discloses that the first cable is "locked" to the second cable. Clark 2 discloses a number of jacket geometries designed to reduce alien crosstalk by preventing aligned stacking of cables with like twisted pairs. With respect to Figure 10, Clark 2 discloses that the "cable jacket 502 also includes a medial portion 508 between first and second end regions 520 and 522...the medial region 508 has a first thickness 524 and the first and second end regions 520 and 522 have a second thickness 526." Clark 2 further explains that in one embodiment, the "first and second end regions 520 and 522 are preferably sized and arranged to mate with the medial portion 508 so that a plurality of cable may be stacked in a lap joint manner as shown in FIG. 10." However, Clark 2 does not disclose or suggest that the cables

530 and 532 are "interlocked." Clark 2 merely discloses that the differently-sized end and median portions cause the cables to stack in such a way that there exists a large amount of jacket material between like twisted pairs, thereby reducing alien crosstalk (col. 7, lines 50-60). However, there is no suggestion at all that the cables "lock" to one another such that the group of cables may be manipulated as a whole. Rather, the suggestion is simply that the cables are stacked, one on top of another, without any joining together. In other words, one cable may be lifted off the pile without "disconnecting" it from the others.

By contrast, Applicant's claim 12 specifically recites that the jacket protrusions cause the first cable to "lock" to the second cable. Referring to Applicant's specification, for example, on page 15, it is explained that, in one embodiment, the protrusions 165a of one jacket "may mate with the protrusions 165b of another jacket 163b so as to interlock two corresponding cables 117a, 117b together. Thus, the individual cables 117 making up the bundled cable 161 may "snap" together, possibly obviating the need for a binder to keep the bundled cable 161 together." In other words, the jacket protrusions may act to temporarily join two cables together, allowing the bundled cable to be manipulated as a whole without the need for a binder to keep the cables together because the interlocked jackets will keep the cables together. Therefore, claim 12 is directed to a bundled cable wherein, instead of merely being stacked on top of one another as disclosed in Clark 2, the first and second cables are interlocked. This is not disclosed or suggested in either of Clark 1 or Clark 2.

The art of record, whether taken alone or in combination, does not disclose or suggest all the limitations recited in Applicant's claim 12, as amended, because nowhere in the art of record is there disclosed or suggested a bundled cable comprising at least two jacketed cables wherein "each of the first and second jackets comprises a plurality of protrusions" and "wherein the plurality of protrusions of each of the first and second jackets are outwardly projecting, and wherein the first and second jackets are adapted to mate with one another so as to lock the first cable to the second cable." For at least this reason, Applicant's claim 12 is patentable over the art of record and withdrawal of the rejection of claim 12 is respectfully requested.

Claims 15-17 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,194,663 to Friesen et al (herein referred to as Friesen) in view of Gaeris. Applicant respectfully traverses this rejection.

Applicant asserts that the proposed combination of Friesen and Gaeris is improper for lack of motivation to combine. The Examiner states that "it would have been obvious...to modify the cable of Friesen to include the core configuration separating the twisted pairs as taught by Gaeris" because Gaeris discloses several advantages of the core. Applicant disagrees. Specifically, Friesen is directed to a cable that achieves enhanced performance through the selection of conductors with different diameters to compensate for differences in insertion loss between twisted pairs with different twist lays. There is no discussion in either Friesen or Gaeris as to the possible effects of inserting a core into Friesen's cable on insertion loss or other characteristics of the twisted pairs. Since Friesen is particularly concerned with the characteristics of each individual twisted pair, there would be no motivation to disrupt Friesen's geometry by inserting a core. The law is clear that it is not sufficient to establish a rejection under 35 U.S.C. §103 merely that the references can be combined – there must be a teaching or suggestion in the prior at that would lead on skilled in the art to make the combination. Because there is no suggestion in either Friesen or Gaeris that inserting a core into Friesen's cable would aid, or even not harm, Friesen's goal of minimizing skew (i.e., keeping a substantially same insertion loss) between different twisted pairs, such motivation to combine the references is absent in this case. Therefore, the proposed combination is improper and the rejection should be withdrawn.

However, even if one were to combine Friesen and Gaeris as suggested in the Office Action, the combination fails to disclose or suggest all the limitations recited in Applicant's claims. Applicant's claim 15 recites, in relevant part, that "the first and second twist lays and the first and second nominal impedances are selected such that a skew between the first and second twisted pairs is less than about 21 nanoseconds per 100 meters and a difference between the first and second nominal impedances is between approximately 2 Ohms and 15 Ohms." By contrast, in Friesen, the characteristics of the twisted pairs (e.g., conductor diameter and twist lay) are selected such that nominal impedances of each twisted pair are as close together as possible, "centered about 100 Ohms as much as possible" (col. 9, lines 16-

17). Each of the cable examples given in Friesen show the twisted pairs having impedances within about 1 Ohm of one another. The Examiner points to column 9, lines 12-15 of Friesen as disclosing that the twisted pairs have nominal impedances within a range of 2 – 15 Ohms of one another. However, Applicant disagrees. Rather, as discussed above, Friesen shows the twisted pairs having nominal impedances being within about 1 Ohm of one another. In Col. 9, lines 12-15, Friesen states that the industry standard requires each of the twisted pairs in a 100 Ohm cable to have an impedance within +- 15 Ohms of 100 Ohms. Friesen goes on to state that "all four pairs in a cable should be centered about 100 Ohms as much as possible...it should be noted that...the present invention allows the tolerance for the average characteristic impedance to be essentially lowered from +- 15 Ohms to +- 1 Ohm" (col. 9, lines 16-24). A goal of Friesen is specifically to make all twisted pairs within a cable have substantially the same characteristic impedance. There is thus absolutely no motivation to modify Friesen to allow the twisted pairs to instead have characteristic impedances that vary between 2 and 15 Ohms from one another when a particular aspect of Friesen's invention is to lower the difference in twisted pair impedances to about +- 1 Ohm. Therefore, Friesen, whether taken alone or in combination with Gaeris, fails to disclose or suggest all the limitation recited in Applicant's independent claim 15. Accordingly, withdrawal of the rejection of claim 15 is respectfully requested.

Dependent claims 16 and 17 depend from claim 15 and are therefore allowable for at least the same reasons as discussed with respect to claim 15. Accordingly, withdrawal of the rejection of claims 16 and 17 is respectfully requested.

Newly Added Claims

Applicant has added new claims 18-30 to further define Applicant's contribution to the art. Each of the newly added claims is supported by the specification as filed (including the drawings) and no new matter has been added.

New independent claim 18 recites, in relevant part, a cable comprising "a jacket comprising a plurality of protrusions extending away from a surface of the jacket, wherein the surface of the jacket is an internal surface such that the plurality of protrusions extend into the cable toward the plurality of twisted pairs of insulated conductors, and wherein the plurality

of protrusions are sufficiently closely spaced to prevent any of the plurality of twisted pairs from lying between adjacent ones of the plurality of protrusions." As discussed above in reference to claim 9, the prior art of record, whether taken alone or in combination, does not teach such a cable jacket. Therefore, for at least this reason, new independent claim 18 is patentable in view of the art of record and is in condition for allowance.

New independent claim 21 recites, in relevant part, a cable comprising "a first jacket surrounding the plurality of twisted pairs and the separator," and "a second jacket surrounding the first jacket, wherein "at least one of the first jacket and the second jacket comprises a plurality of protrusions extending away from a surface of the respective one of the first jacket and the second jacket." The prior art of record does not disclose or suggest a cable having a such a dual-layer jacket. Therefore, for at least this reason, new claim 21 is patentable in view of the art of record.

New claim 29 recites, in relevant part, a bundled cable comprising "a first cable including a plurality of twisted pairs of insulated conductors and a first jacket, the first jacket including a first plurality of projections extending outwardly from an outer surface of the first jacket," a second cable including a plurality of twisted pairs of insulated conductors and a second jacket, the second jacket including a second plurality of outwardly projecting protrusions, wherein the first cable is twisted in a helical manner with a first cable lay so as to provide a first twisted cable; wherein the second cable is twisted in a helical manner with a second cable lay so as to provide a second twisted cable; and wherein the bundled cable further comprises an overall jacket surrounding the first and second twisted cables along a length of the bundled cable." The prior art of record does not disclose or suggest such a bundled cable comprising at least two twisted cables each having jackets with outwardly projecting protrusions. Therefore, for at least this reason, new claim 29 is patentable over the art of record and is in condition for allowance.

New dependent claims 19, 20, 22-28 and 30 depend from one of claims 18, 21 and 29 and are therefore patentable for at least the same reasons as discussed in reference to their respective base claim. Accordingly, each of new dependent claims 19, 20, 22-28 and 30 is in condition for allowance.

Conclusion

In view of the foregoing amendments and remarks, this application should now be in condition for allowance. A notice to this effect is respectfully requested. If the Examiner believes, after this amendment, that the application is not in condition for allowance, the Examiner is requested to call the Applicant's attorney at the telephone number listed below.

If this response is not considered timely filed and if a request for an extension of time is otherwise absent, Applicant hereby requests any necessary extension of time. If there is a fee occasioned by this response, including an extension fee, that is not covered by an enclosed check, please charge any deficiency to Deposit Account No. 50/2762.

Respectfully submitted,

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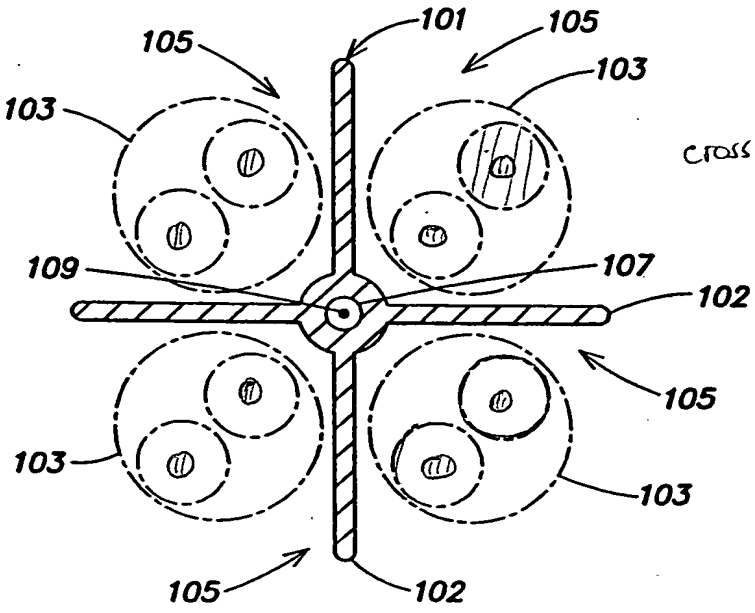
Docket No. M0506-703330
Date: May 4, 2005



cross-hatching has been added to all twisted pairs

FIG. 1

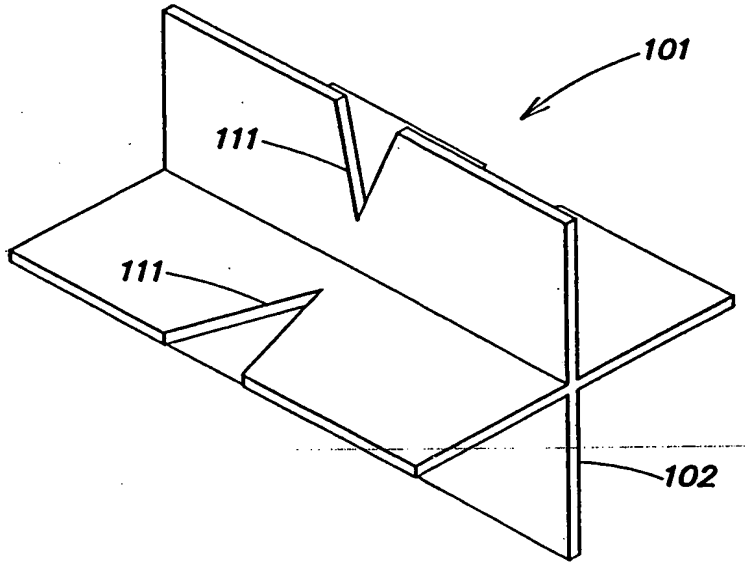


FIG. 2

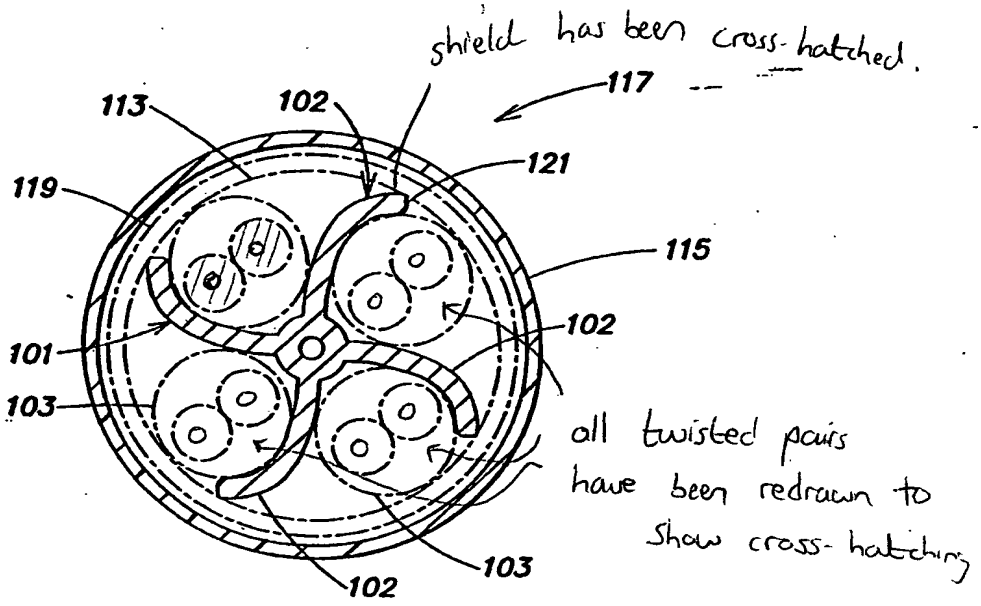

shield has been cross-hatched.
117
113
102
121
119
115
102
101
103
all twisted pairs have been redrawn to show cross-hatching
103
102

FIG. 3

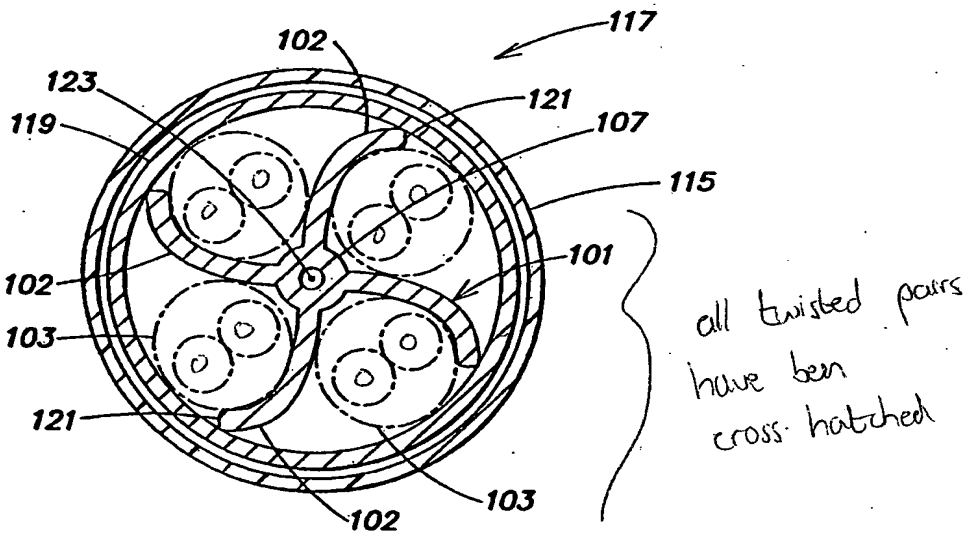

117
102
123
121
119
107
115
101
102
103
all twisted pairs have been cross-hatched
121
103
102

FIG. 4

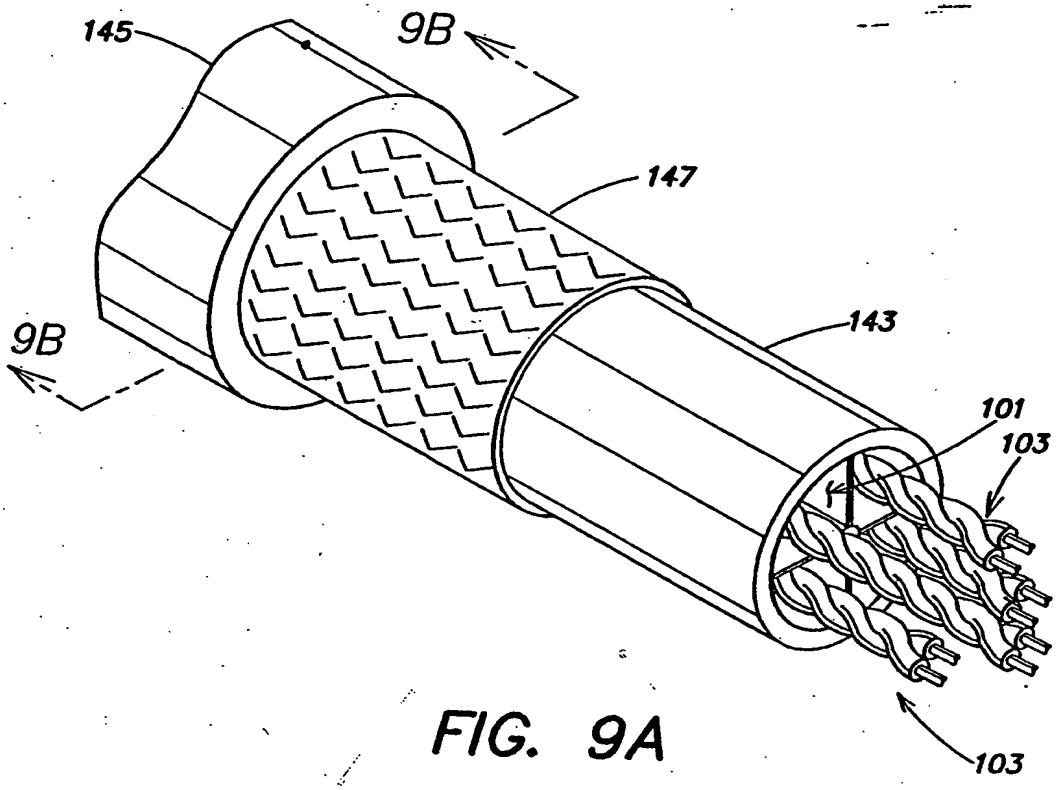

145
9B
147
9B
143
101
103
103

FIG. 9A

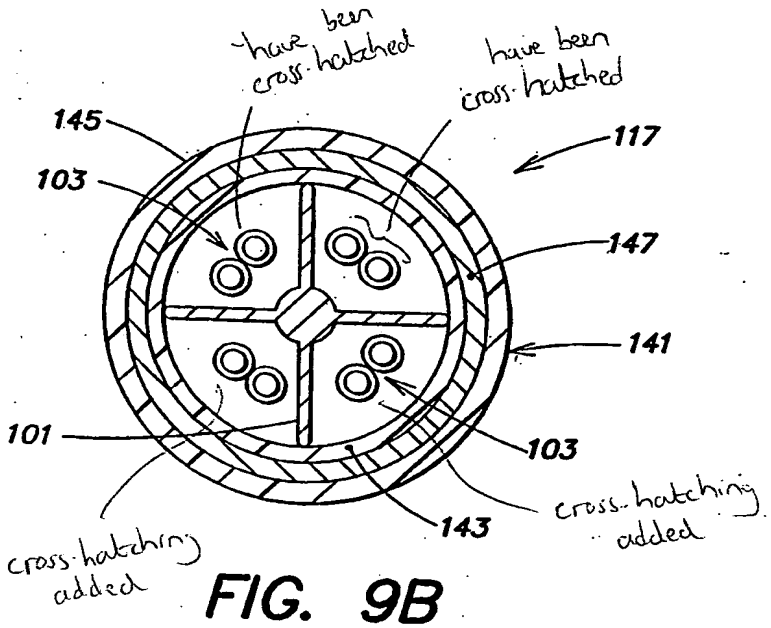
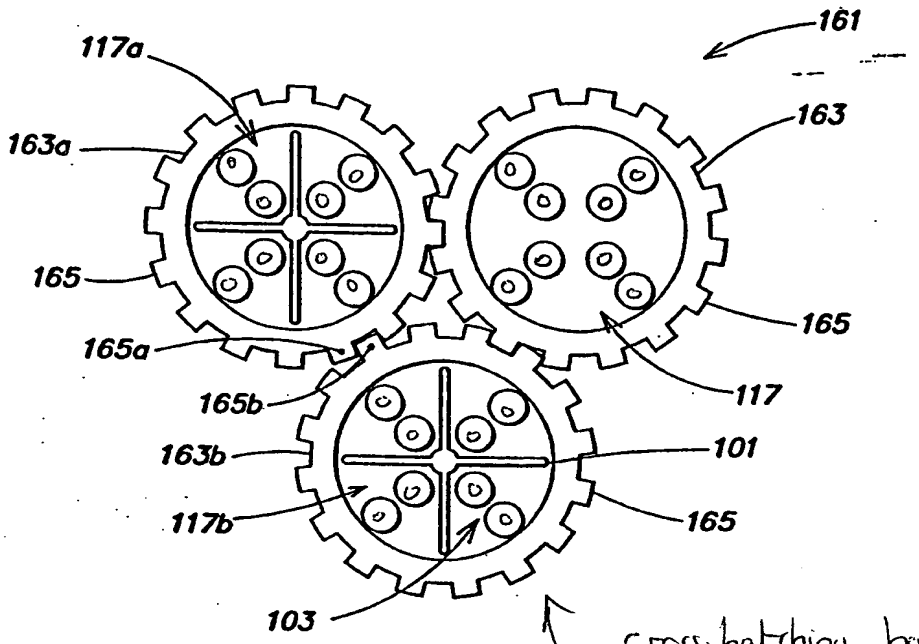

have been cross-hatched
have been cross-hatched
145
117
103
147
141
101
103
143
cross-hatching added
cross-hatching added

FIG. 9B



cross-hatching has been added to all twisted pairs, cores and jackets

FIG. 11

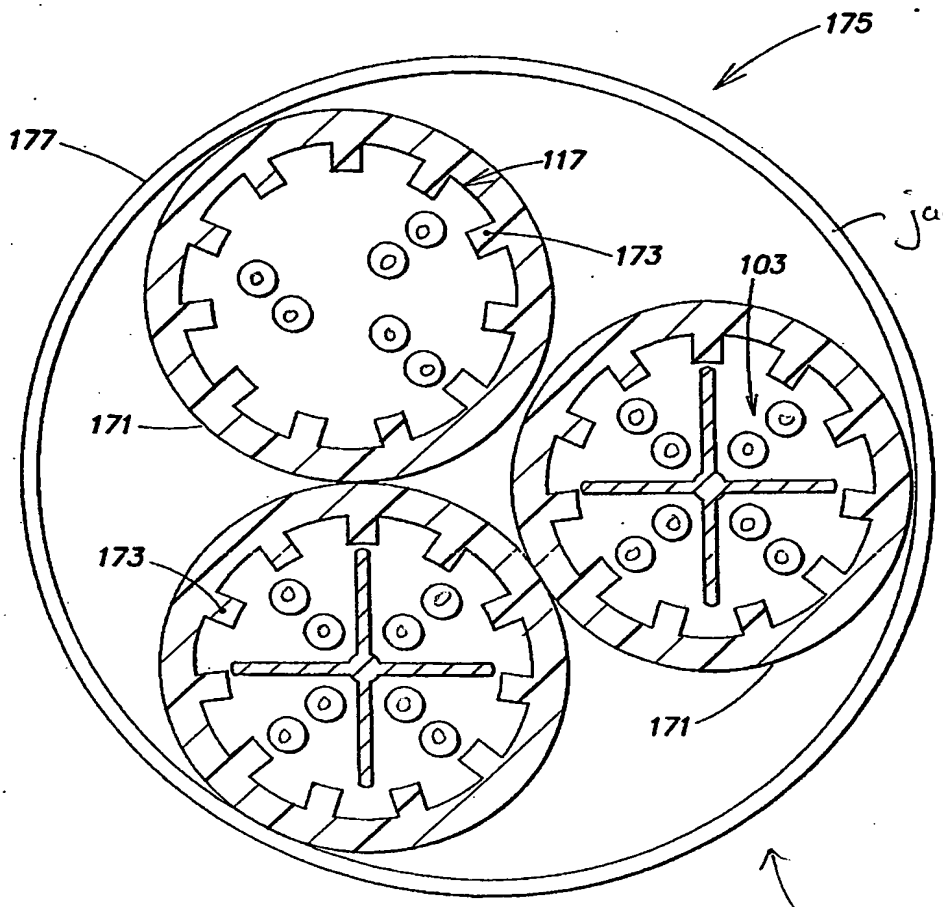

175
177
117
173
103
171
173
171
jacket has been cross-hatched.
cross-hatching has been added to all twisted pairs

FIG. 13